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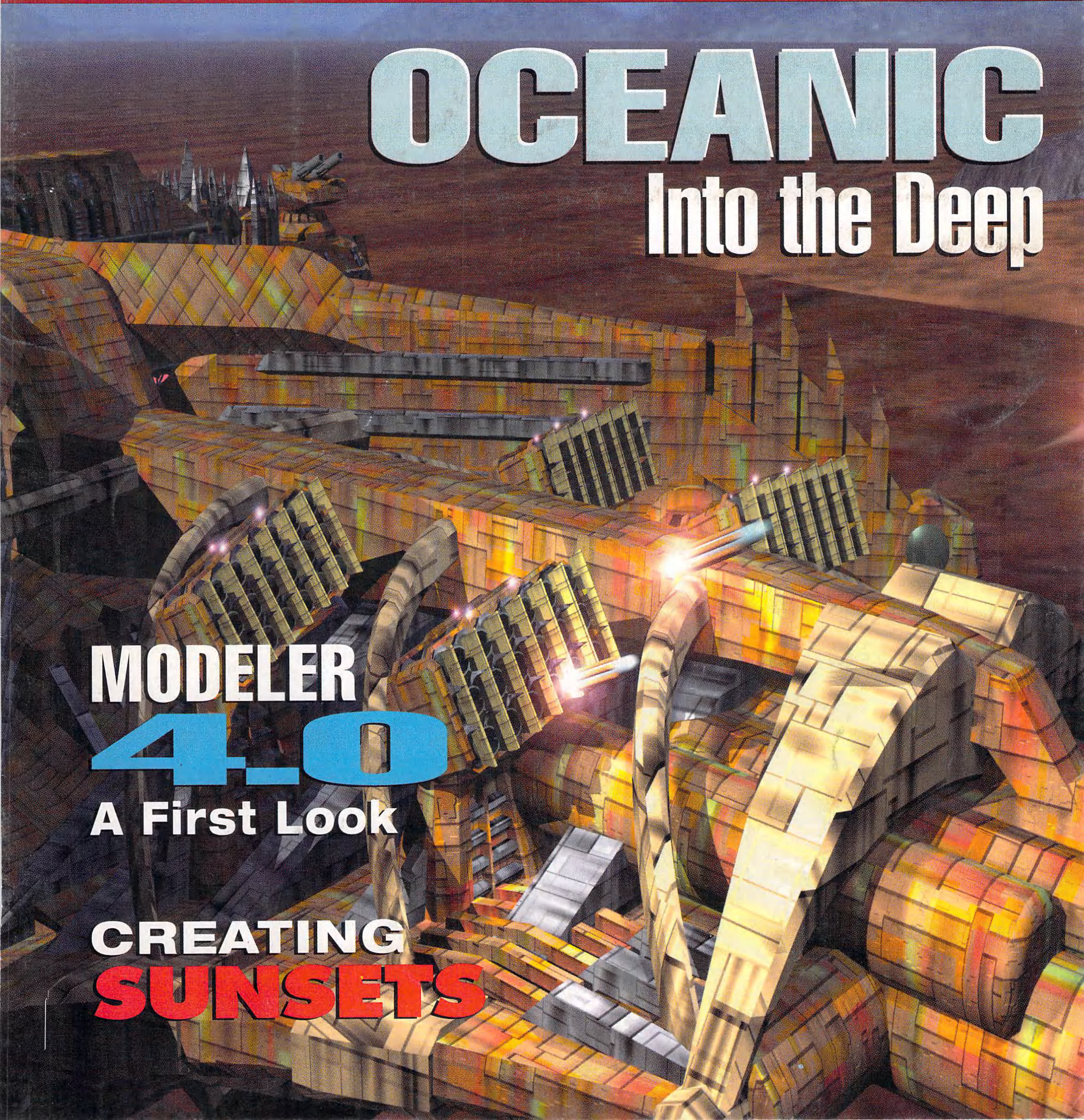
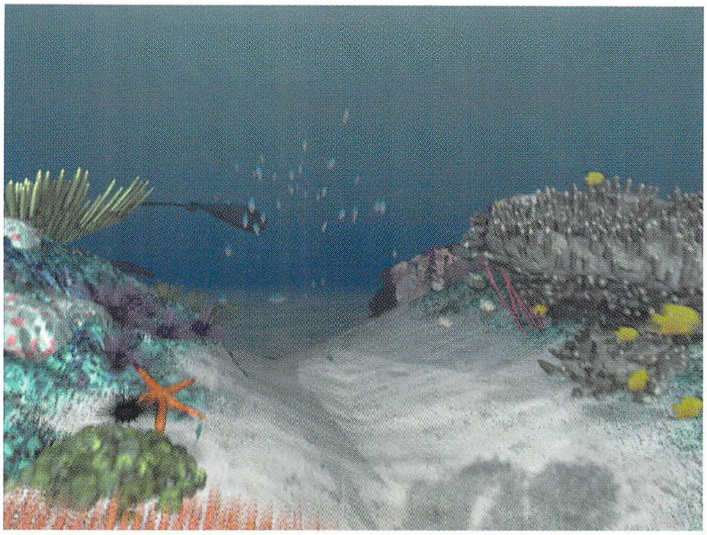


OCEANIC
Into the Deep

MODELER 4.0
A First Look

CREATING SUNSETS



These frames show a progression of key sequences in the Oceanic animation. See page 8 for the story.

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Bubbles

The 25-second spot begins with a faceful of fish. The creatures were animated using Sparks' "flock" option.

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Diver Down

A dolphin morphs into a diver who exhales and the bubbles then clear to reveal the company's logo.

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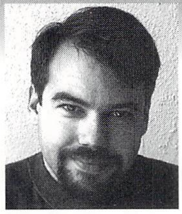

EDITOR'S MESSAGE

by John Gross

You're probably wondering where all of the ads are this month. I forgot to mention last time that we had ads in that issue because it was the one that would be given away at SIGGRAPH. I've had a lot of people comment (both good and bad) about the changes, but you'll notice that we're back to normal number of pages this month. Well, almost normal. The glossy paper is a permanent improvement. And we are starting to incorporate some larger screenshots, so you'll be able to see them without a magnifying glass. *LIGHTWAVEPRO* will be making other changes in the future, so keep your eyes open and remember that we welcome feedback of all kinds.

Speaking of SIGGRAPH, last night (Aug. 9) was the first annual Wavey awards. The show went pretty well (everything worked!) and some great work was displayed. (See Nov. 1995 *Video Toaster User* for more extensive coverage of this event.) Amblin Imaging's Tony Stutterheim, LightWave creators Allen Hastings and Stuart Ferguson, and I judged the entries and picked the winners about a week earlier, and let me tell you, it was really tough. Along with the presentations of awards, we had host Penn Jillette swallowing fire and pushing beans through his tear ducts, and Tim Jenison gave us a great *Phantom of the Opera* performance. All in all, it was a great time. Among all of the outstanding animations shown, I was particularly impressed with work by a company called GRID, based in Gent, Belgium. (I think they deserved an award just for coming the longest distance!) They've only been using LightWave for about a year, but showed some impressive stuff. Keep an eye out for this up-and-coming organization.

By the time you read this, LightWave 4.0 will have finally shipped. (Hurray!) I think most users will be pretty impressed with the new package. NewTek knocked themselves out on this one, and the entire LightWave team deserves a big hand. Kudos as well to James Hebert and the documentation team for providing some much-improved new manuals.

Along with the final shipping version of LightWave, we will be conducting

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	Phillip Hice
	John F. K. Parenteau
	Tom Williamson
Group Publisher	Michael D. Kornet

Editorial Offices: Avid Media Group, Inc.
273 N. Mathilda Avenue, Sunnyvale, CA 94086
Telephone 408-774-6770; Fax 408-774-6783
John Gross can be reached electronically at:
jgross@netcom.com (Internet); 71740,2357 (CompuServe)

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This month's cover image is from LightWave co-creator Stuart Ferguson's Titan's Eternal. *Portions of this 3-1/2–minute film were shown at SIGGRAPH's Electronic Theatre. "It's an idea I've wanted to animate since college, and I put it together in my spare time over the last two years while working on LightWave Modeler. Having a [DEC] Alpha around didn't hurt."*

Digital Cinematography

by John F. K. Parenteau

Style is everything. From the clothes they wear to the car they drive, people spend an enormous amount of time developing their style. It's a mistake, however, to assume that any style can be considered good or bad. Style is neither of these things, depending on who's judging it. The concept is extremely subjective. What one person may assume is a bad style (such as purple hair) may be stylish to another. It's all in how you look at it.

In this column I've spent quite awhile discussing the basics of lighting and camera design in LightWave. Once you've even partially mastered these areas, you'll have already begun developing your own style. In any form of photography or art, a style is developed early as a photographer or artist discovers the methods and techniques he or she likes to use to accomplish the job at hand. When I worked as a cameraperson for a living, I liked a particular type of diffusion (216), and I found a way to use it in almost any situation. I happened to enjoy the soft light that was created by this material. I quickly became known for this softlight approach.

Cinematographer Caleb Deschanel, one of my idols, is best known for such films as *Black Beauty*, *The Right Stuff* and *The Natural*. *The Natural* in particular captured my attention as the exact example of how I would like my work to look. The light is soft and motivated by a practical source, such as a window or lamp, yet uses a touch of fantasy to add sparkle to each scene. The film also uses camera and lighting design to help tell the story, a point you might remember me harping on numerous times. It is important to understand that style is not only subjective, but adjustable by the whims of the project at hand. All of the people below have a certain style that is considered their trademark, yet it's continually adapted to the conditions and environment at hand. Though adjusted, these cinematographers' styles are still evident in their work.

Let's take a couple of movies as specifics. It might be a good idea, at this point, to rent *The Natural* if you haven't seen it already. When Roy Hobbs, played by Robert Redford, is first called up to try out for the New York Knights, he meets his girlfriend (Glenn Close) in the barn at night. It is an intimate scene: they make love for the first time and promise to always be together. Since moonlight was the only source available, logically, in the environment, Caleb used a touch of fantasy to help out. The moonlight shone through the window, striking the hay at their feet. With the assistance of a light-colored sweater on Redford, the light was bounced from the floor, or his clothing, to underlight both characters in a soft glow. Nothing fancy—just a simple and elegant answer to a seemingly difficult situation. This is probably one of the best examples of a style. Caleb often makes use of practical lighting sources, whether they are actually existing (the sun) or fakes (the moon). In *The Right Stuff*, he used the flame of the rocket in contrast to the quiet of the desert to enhance the dangerous quality of the task Chuck Yeager had just undertaken: breaking the sound barrier.

It may sound cliché, but often the simplest approach is the best. An instructor of mine once recommended that once we illuminate the set, find one light to turn off. Cinematographers or animators frequently fail to carefully analyze the scene to establish the simplest answer to lighting and camera. Once you set the first light in the wrong place, the impulse of setting a second, third or fourth light becomes overbearing. From the first mistake, lighting becomes an effort to cover for previous errors, rather than creating a mood. You end up building a mood that isn't the one you wanted! The camera can be another nightmare, since a bad camera position for your master shot can produce impossible angle and coverage problems down the line. That's why storyboards were invented, and why they make sense, even in stick-figure mode. They help you understand the job at hand before it becomes the nightmare at hand.

Sane cinematographers never stay married to one style, but instead have the ability to modify their style to accomplish different tasks. In *The Right Stuff*, Caleb departed from the soft-light approach and used a much harsher look. Considering the difference in story lines, it only seems appropriate that *The Right Stuff*, a story about the early days of space flight, might take on a rougher feel. As Yeager is breaking the sound barrier for the first time, the sunlight is harsh in the cockpit, challenging him to go faster. Imagine if that was a super soft light spilling in the cockpit. The mood would be broken by this contradiction.

On the other hand, contradiction can play an important role in telling a story, if used in the correct instance. For *Empire of the Sun*, Allen Daviau used contrast to communicate the story. Not just contrast in light or dark, but in content as well. One of my favorite scenes is when the camp is under attack by the American forces. Young Jim runs to the top of the tower to watch a P51 Mustang (Cadillac of the sky) soar past him. As the plane approaches, the shot switches to slow motion, and the pilot seems to connect with young Jim. The contrast between a great air battle and this moment of connection between Jim and the pilot gives us a strange sense of insight into our character's life. The slow motion allows us to take a "timeout" from the battle, freezing the moment in time and in our memories.

It would be impossible for me to run through the many scenes and films that have affected me and my animations. I can only recommend that you seek out those styles you connect with and do your best to understand them. Any effort in that direction can only make you better. Be careful, however, to avoid mimicking. Remember that any lighting setup is not just a function of a person's style, but also a careful compromise between the look that is desired and the conditions and limitations of the set. You are trying to develop a style. Understanding the essence of your favorite cinematographer's thinking is the true goal, not matching exact setups.

Computer animation is, of course, a much different ballgame. Without the same diversity of tools available to a cinematographer, options are slightly limited. Yes, I mean only slightly. It's amazing how many looks can be created with only minor, and seemingly insignificant, adjustments to approach and design. Let's take a few examples of current, mainstream television effects to compare and contrast style, and to understand the limitations of each environment.

Ron Thornton, head of Foundation Imaging, has been directly responsible for the effects design of *Babylon 5* since its start. Ron has always had a keen sense of movement and drama— it's evident in every shot he touches. There's a certain power and elegance to the *Babylon 5* effects. Like Caleb and Allen, Ron has found ways to adapt his style to use, or perhaps avoid, some of the problems of his environment.

Ron works in a specific setting—namely, space—

that both limits and enhances his abilities to produce effects. For example, space, of course, hides nothing. There is no atmosphere or water to help hide some of the problems that might arise on a particular shot. This may seem trivial to you, the reader, but in truth it poses a particular challenge. Without the ability to fade in the distance, space has a way of destroying scale. Let's assume you have a very small ship in space. Try to place it so that it fills the left half of frame. Now take a very large ship, much larger than your small one, and place it on the left side of frame, pushing it back far enough to fit. How can anyone tell that they aren't the same size? They sure look the same!

Though the problem never goes away, there are ways to work around it. Take that same large ship and move it beside the camera. Place a slow and lumbering motion on the ship as it moves into frame. Now take the small ship and move it toward camera, keeping it relatively small, yet with a snappy, brisk motion, perhaps a barrel roll. The fact that the small ship appears small and moves with quick motions, while the large ship seems to plod along, will give the mind some information to apply scale. (By switching ships, you can create the same effect. That's part of the problem.) Ron utilizes the positives of space to disguise the negatives. Since space has no gravity, the ships must thrust and counterthrust to guide themselves through space. The elegance of the fightercraft as it whips around with its thrusters is a treat to see, and immediately removes any doubt that we aren't actually in space. So it is safe to assume, from an outsider's perspective, that a part of Ron's style is the elegance of his motions.

Just as Ron has his roadblocks and solutions, Tony Stutterheim and I face different challenges on *seaQuest*. Set underwater, *seaQuest* effects use fog to represent the depths of the ocean. This, of course, solves the problem of scale, as objects can fade into the distance. If we were to reproduce the ship test above in this environment, the large ship, since it had been pushed back so far, would be barely visible, while the small ship would appear much clearer. This situation, in turn, causes its own problems. If we were to actually re-create underwater conditions, the entire screen would simply be blue, and the effects would be extremely boring! We have found it necessary to "cheat" the fog way back to allow extra visibility in order to see anything underwater. Early in the first season, we attempted to truly re-create underwater, but quickly came to realize that the audience couldn't see anything! Though we are not faced with the clarity of space, we must solve the dilemma of lighting underwater. Fog tends to "milk" the image, reducing any color or contrast to a dull blue (in our case). Though this may seem to be a setback, we have developed a style of using practical lights and lens flares to self-illuminate the undersea colonies and ships. The underwater effect plays directly into my style, lending a soft feel to most lighting designs. I try to utilize as few lights as possible, which reduces overlighting and allows for contrast between the ship and the water—a most attractive look. I've always been a fan of slow, majestic camera motions. Working on *seaQuest* and *Star Trek: Voyager* has allowed me to bring this style to my animations. You can usually catch a shot I've animated or designed if its motion is in some way slow and majestic.

As you study the work on shows such as *seaQuest, Star Trek: Voyager* and *Babylon 5*—as well as the numerous feature, commercial and music video work you see on a day-to-day basis—take note of the things you like and don't like about the images you see. This is the first step in developing your own style. As you find techniques and looks you favor, you will begin incorporating these elements into your own work. But don't be a copycat! I've never known an artist that can look at another's work and admit it's perfect. In an effort to fix those imperfections we see, we find our own methods, and whether we like it or not, develop our own style.

LWP

John F. K. Parenteau is a vice president and effects supervisor for Amblin Imaging.

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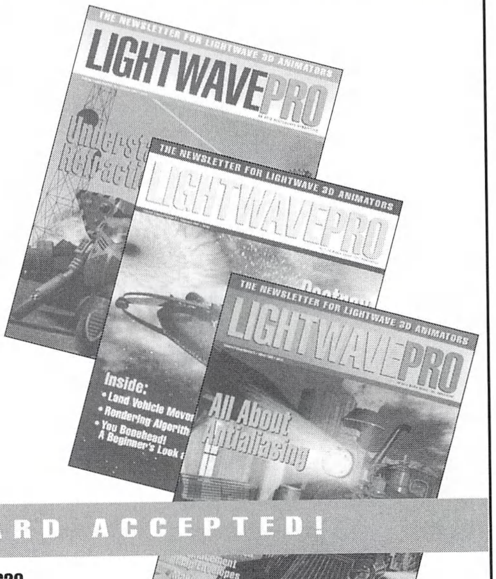

LightWave Tech

by Phillip Hice

I would like to start out by thanking Joe Straitiff (via the Internet) for pointing out a few inaccuracies in the ftp/ScreamerNet section of my last article. The errors are related to ftp commands. I stated that you couldn't change directories on the local machine during a connect, which was wrong. In my haste to put together a simple networking solution article, I did an injustice to my readers in that, rather than carefully re-reading my article for technical accuracy, I performed more of a quick scan to check for major errors in grammar and spelling. I apologize, and will do everything I can to keep mistakes from reoccurring. In an effort to compensate, you'll find included at the end of this article a listing of the ftp commands, their syntax, and a brief explanation as to what they are used for. I hope this helps, even if just slightly more than the information I have already given.

This month I am going to touch on a few problems that seem to be popping up more and more often for new non-Amiga LightWave users. First, I want to address the topic of PC clone systems. Over the last several weeks I have been bombarded with questions about PC motherboards having problems with Windows NT. The problem is that the board(s) seem to run inconsistently. In other words, you can't even install NT; you can install NT, but it won't run; or you can install and run it, but it crashes with irregularity.

I have received several comments on the problem, with several different opinions as to what it is. Some believe it's a bug in NT, and that rather than address it, Microsoft has decided to label boards that have this problem non-compatibles. I have also heard that it was a problem with Pentium chips or specific chipsets from Intel. In an effort to try to pinpoint the problem, I have acquired several different manufacturers' PCs. These systems are of various configurations—anywhere from 386s with ISA or VLB buses to Pentiums with PCI. In working with this diverse selection of machines, I felt that I should be able to come to some conclusion. Yeah, right!

Of the seven machines tested (all clones, no name brands), three of them ran without a hitch, right out of the gate. These three include a 386, a 486 and a 586 (Pentium) processor. The motherboards had nothing in common other than that the processors were all genuine Intel x86. The Chipsets and peripherals varied.

As for the other four systems, I encountered some unusual results. On all of these systems I ran into one or more problems needing either minor or drastic action for NT to run (if at all). Two of the systems, which were Pentium 100s, required that both the internal and external cache be disabled during the install processes. Once installed, with caches enabled, the systems worked fine. If you are having difficulties with your system, I suggest you try this solution first; it's worked for several of my friends who do nothing but build systems for resale. On the other hand, the next machine I tested required that the caches be left off during the install process, and wouldn't boot NT unless they remained disabled. The last machine I tested just wouldn't get through the setup procedure completely until I clocked it down to run at 90 MHz rather than 100 MHz.

If you seem to be having a problem with the installation of NT, try disabling cache(s) and/or clocking down your system. To reduce the clock speed of your system, you will need the motherboard documentation to help you identify which jumpers on the board are for setting clock speed, and what the proper setting is for the desired speed. As for disabling cache(s), every PC that I've seen uses a setting in the BIOS (Built-In Operating System) setup utility. Most of you have probably seen the message onscreen during bootup that says "Hit <del> to enter setup," or something similar. This is where you will change the BIOS settings. In order to get to the BIOS setup, you must reboot. Then, during bootup, when you see the message prompting you to press a key to enter setup, do so.

Since there are several different BIOS manufacturers on the market, the procedures will be different from system to system, but generally speaking, all you need to do is locate the setting for Internal Cache and External Cache, and then press the proper key to change the settings to disable them.

Once you have finished your install, boot up NT once more to verify that it runs out of setup mode. Once you have done this, select Shutdown and Restart from the Program Manager's File menu. Once the system restarts, re-enter the bios setup utility and re-enable the caches one at a time, starting with the internal. After saving changes, reboot NT. If it runs correctly, go back through the same process and enable the external cache and try it all over. If these suggestions do nothing to help NT install and run, there isn't much else you can do.

As you can see, just about every possible combination may be needed to get a system to install and run NT if you are experiencing these problems. As for my testing, I started out with everything enabled, then, step by step, disabled and re-enabled cache settings to get the machines to function as closely to normal and with the greatest performance possible.

After all of my testing, I have come to the following conclusions regarding PCs and the Windows NT operating system:

(1) **Make every attempt to purchase a system that is listed on the Windows NT hardware compatibility list.** Not only is this the only way to be sure that Microsoft has tested and qualified the product for use with Windows NT, but if you have a problem and call Microsoft tech support, they may actually be able to help. If your system isn't on the list, chances are you won't get very far, since tech support has no way of knowing if your system is able to run NT. It's much easier for them to blame problems on non-compatibility than a software issue.

(2) **Purchase only from reputable companies.** This recommendation, along with the above, should always be followed, whether purchasing a PC or anything else for your system. Only a reputable company determined to provide quality product and service will be willing to help you through your problems, even if it means returning the system for a refund.

(3) **Document your purchase.** With thousands of computer dealers nationwide, finding a reputable one is possible, but not always easy to do by just walking in. So you should fully document your

see LightWave Tech, page 17

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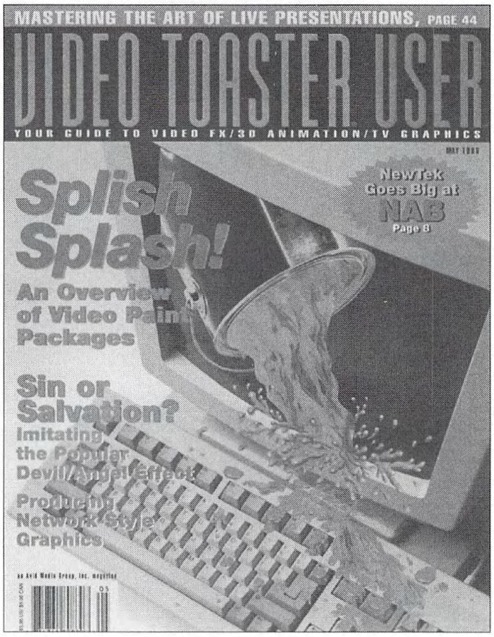
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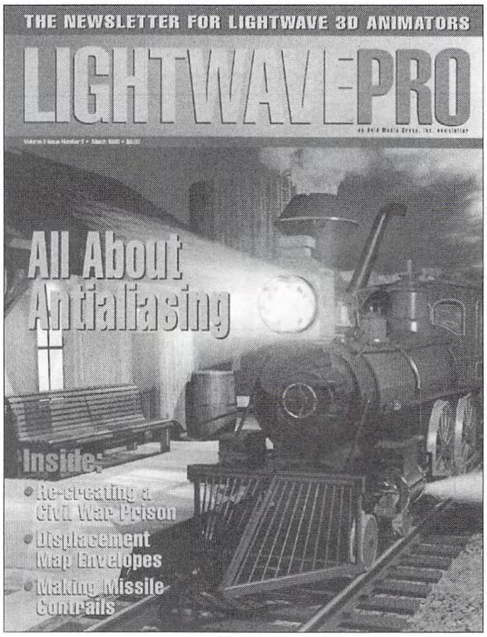
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The Depths of OCEANIC

How Long Can You Hold Your Breath?

by Tom Williamson

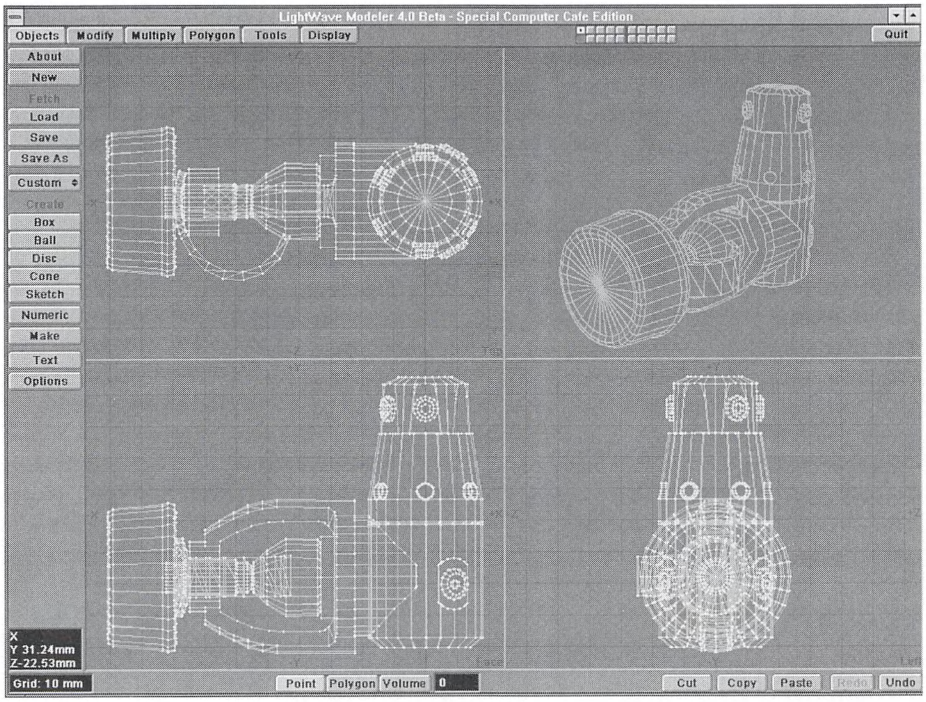
Every once and a while a project comes along that challenges us to think in a whole new way. A project that is so involved that we think we'll never finish it. One that, on the onset, seemed a whole lot simpler that it actually was. But, once it's finished, there's no more satisfying experience. Our work for Oceanic is the epitome of a truly challenging project.

The Concept

In mid-August 1994, Paula K. Productions approached Computer Café, the effects house I animate for, with what initially seemed like a pretty straightforward assignment. Oceanic, a leading scuba and dive equipment company, needed an opening for its corporate and promotional videos. The concept seemed simple enough: a 25-second spot with a dolphin morphing into a diver sporting Oceanic gear. The idea of using live-action footage was considered and quickly dismissed because of the logistics of finding two shots that met the strict criteria. The decision was made to create the entire environment with LightWave. After a few meetings the concept was locked: fade in with a slow camera move over underwater terrain. A dolphin morphs into a diver, who turns in front of the camera, exhaling as he passes. His bubbles clear to reveal a rippling Oceanic logo, which bursts into a school of fish that proceed to swim toward the camera and off-screen. Simple, right?

The Approach

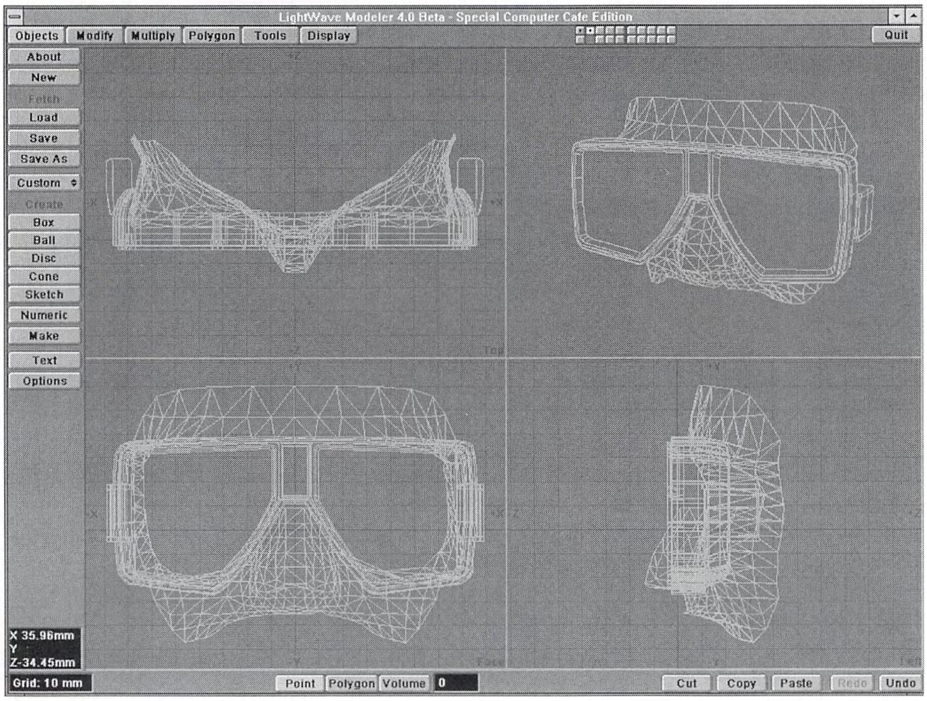
One of the things that I think helps me the most in my animation work is my point of view. Coming from a traditional special-effects background, my way of thinking is rooted there, so most of the tools available to me in LightWave have "real-world" counterparts. When I start conceiving the approach I'll take on a project, I'm not thinking polygons. Generally, it's matte paintings, foreground miniatures and models. I don't know if it's a better approach, but it works for me. The Oceanic piece needed several elements and several programs. The plan was to render the background first, complete with all the small fish and residual animation. Then we'd render all the elements with alpha channels and composite them together. Before we were finished we had 12 layers of compositing.



The 3D model of the first stage SCUBA regulator.

The Models

With the help of a stockpile of reference material, including actual dive equipment on loan from Oceanic, the modeling task began. While Dave Ebner started on the terrain, I began work on the diver. His equipment was first on my list. Using LightWave Modeler, I built everything to approximate scale. The diver was outfitted with a mask, regulator, BC vest, tank and fins. Using Tim Wilson's Humanoid as a base, we assembled the diver piece by piece. A null object was at the top of the hierarchy, allowing for gross repositioning without our worrying about any existing keyframes. The diver's hierarchy was the Humanoid default, with the equipment parented to the appropriate body parts. A portion of the diver that was particularly tricky was the air hose, which had to stay connected to both the first and second stages of the regulator. To do this we used a multi-segmented tube and parented it to the second stage (at the mouth). Then, using Bones, the tube was bent and carefully keyframed to stay connected to the first stage (at the tank). After all the pieces were in place, a scene was saved as "diver-master." Another cool piece was the Mako dive vehicle, which propels the diver through the scene. The model was built using splines. Starting with a cage generated by a macro, I refined the shape to make it pretty accurate. Once all the splines were finalized, I patched them, added some detail, and surfaced it. A propeller was also made and parented to the dive vehicle, then keyframed to spin. The dive vehicle proved to be a little tough to animate, since it was parented to the diver's right hand and the whole left arm had to track it. Having the actual dive vehicle for reference was invaluable. I can't imagine trying to model all those free-form curves with pictures. The spinner dolphin is a modified Viewpoint bottle-nosed dolphin object. (For more on stock objects, see Oct. 1995 *Video Toaster User*.) In addition to all these models there was a multitude of fish,



Having the Scuba mask model object saved time and made the job much easier.

coral, plant life and scenery generated by Dave and I. All of the models were surfaced as we went, using a lot of scans and maps painted in Opal Paint and rendering the images using Forge.

The Lighting

One aspect that improved the visual aesthetics and helped marry the composites was the lighting. To keep the lighting consistent, a base scene was made with the terrain and scenery and lit accordingly. Next, all the objects were removed but one null object, and the scene was saved again. After the animation was set for an element—the dolphin, for example—we simply loaded the "blank" scene (containing just the lights, fog and camera move), went to the Objects panel and loaded the dolphin from its scene. The caustics in the piece were done with LightWave's Underwater texture. After finding the right settings for the texture (following much experimentation), we applied those same settings to all objects. We used the texture in the luminosity setting of most of the surfaces with these values:

Texture type:	Underwater
Texture size:	30.0, 30.0, 30.0
Texture center:	5.0, 0, 0
Texture fall-off:	0,0,0
Texture velocity:	0.005, -0.005, 0.005
World Coordinates:	On
Texture value:	15% (slightly adjusted according to surface color)
Wave sources:	9
Wavelength:	0.75
Wave speed:	0.025
Band sharpness:	5.0

These settings were used on the separate elements as well, which helped unify the composites. The lights in the scene were minimal to keep it as realistic as we could (the client wanted everything bright and cheery, but realistic). The primary lights illuminating the scene were supposed to be the camera lights, so we had to parent the lights to the camera. To accomplish this we created a null object, called it "CamNull," parented both the camera and the lights to it, and animated the null object just like it was the camera. Other lights in the scene consisted of spotlights pointing up at the plane representing the water's surface, helping to simulate the sun high above, and a distant light for overall illumination.

The Morph

One of the hardest parts of this aquatic puzzle was the dolphin morphing into the diver, or the "dolpher," as it became known. It's also the piece I get the most questions about. Morphing in LightWave is usually pretty easy: just put two objects that meet the requirements (same point count and point ordering) in the scene, make a morph envelope, and voilà, morph city. However, what if you have a hierarchy and need to morph to a solid object? That's where you need 2D morph software. For our morph we began by animating the dolphin with Mark Miller's PowerMacro Snake and saved it in its own scene. Then we loaded our "blank" scene and loaded objects from the dolphin scene. Again, this gave us our lighting and camera move without all the scenery. Next, we rendered the dolphin, saving an alpha channel at the same time. At this point we moved on to the diver.

After loading the "blank" scene, we loaded objects from the "diver-master" scene. Using a background sequence of the dolphin frames, we carefully animated the diver, making sure to keep the morph in mind and the objects lined up. The diver was rendered and an alpha channel was saved at the same time. We then loaded the frames into Morph Plus and did the morph with that software. Once the first morph was completed on the frames, I built a custom morph project by copying the "dolpher" morph project, inserted a sequence of the alpha channel frames and rendered again. With the same vectors, the frames were identical and could be used just like a normal frame/alpha channel set.

The Animation

Along with the camera, dolphin and diver motion, there were a ton of other little things going on. The rays were animated using the PowerMacro "snake" again. This set of macros is great, and Mark was indispensable on this project. He must have made 10 custom revisions to his macros just for us.

A displacement map was used to make the rays swim. There was also the fish coming over the ridge. For these guys we used Jon Tindall's Sparks program and its "flock" option. The hard part was keeping the creatures on course up to the last second, and then having them scatter abruptly to avoid the "camera." After a few tests we locked it down. A lot of the more subtle animation was lost due to last-minute changes in the camera move, but there's still stuff all over the place, including waving plants, assorted little fish and a little crab. The crab was interesting. We were just going to use a little image of a crab with a clip map on a plane, and stick it in the background. As an experiment, I loaded the crab image into Morph Plus and did a still warp, trying to get his legs to move realistically. The results were better than anyone expected, so we put it in the foreground. Unfortunately, the client wanted us take it out, so we put it back in the background. It's still walking, but you can't see it!

The Bubbles

The bubbles turned out to be quite tedious as well. We used Sparks again for these. As anyone who has used Sparks will tell you, it's an incredibly powerful program, but it's not the most user-friendly application I've come across. To do the bubbles I tracked the regulator through the scene with a null object, and saved the motion file. Then, using Sparks, I created a scene using 600 points, five bubble objects, negative gravity (with no ground plane), random birthrate, recycling and a bunch of other parameters (I told you). The result was a scene file with 600 bubbles streaming out of an opening that wasn't there yet. Because the animation was random, we could just run it through three times, and we got three different layers of bubbles. We generated an additional scene with smaller bubbles, then image-processed it. This second scene was used for the gaseous cloud of tiny bubbles.

The School of Fish

After the bubbles clear, the rippling Oceanic logo is revealed. No tricks here, just some simple displacement. Then the logo bursts into a school of fish. A school of what? It seems so simple—just four words in the

see The Depths of OCEANIC, page 16

Modeler 4.0

A Look at Some New Features

by John Gross

L*IGHTWAVEPRO* has looked at some of the new features in LightWave's Layout (see Mark Thompson's "LightWave 4.0 Preview," May 1995 *LWPRO*), but we haven't really gone into depth about the new version of Modeler. At first glance, there may not seem to be a whole lot new with Modeler other than some cosmetic changes here and there and a couple new options. But remember that Stuart Ferguson has been instrumental in the development of the toolkit used to port both LightWave and Modeler to other platforms, and in the new plug-in architecture, which initially may not seem like a lot, but opens up Modeler and LightWave to more expansion than was possible before.

Hot Macro Love

While ARexx is not available on non-Amiga platforms, most of the Amiga macros (many thanks to NewTek's Arnie Cachelin) have been given new life as plug-in functions. The Macro button found in the Objects panel is now labeled Custom, and is home to many of the new functions. Not only do you have the much-beloved (and taken-for-granted) Center and Center 1D functions, but they have been joined by Center Scale and Center Stretch, both of which will scale along an object's bounding box center as opposed to world coordinates.

Julienne is also present, as is the primitives function (with some new usability). Added are Gear and new Compose Text function options. And one of my biggest pet peeves about the Text macros has been addressed. In earlier versions, every time you re-entered the Text macro, all the settings would reset, including the selected font. Now everything is remembered.

Many of the macros now accept user arguments that can be assigned to a custom command or function key. For instance, you may want to use Center Scale with a .5 value, which would half an object around its centroid. By assigning an argument to the function, you can give it a custom name (in the Configure List panel) and use it to size an object by one-half. If you do not supply an argument, Modeler will prompt you for a scale value.

Not all of the custom commands are located in the Objects menu. Commands that modify objects' geometry are generally found in the Tools menu. One of my favorites, Make Spikey, will take any object and subdivide it, but spike out the subdivided points (Figure 1). Try Make Spikey on some of the platonic solids and metaform a few times to get some instant Christmas tree ornaments. Triangle Fan and Triangle strip are two built-in plug-ins that will automatically create triangular faces out of selected points. Triangle Fan will "fan out" the faces from the first point selected to all other selected points in order. Triangle Strip will create a mesh of triangular faces from alternating points selected in two rows of points (like two edges that need to be sewn together).

Do That Again

Perhaps one of the most welcome additions to Modeler is the Undo/Redo buttons located at the bottom of the screen. Not only can you undo your last operation, but you can have multiple undos! Located in the Options panel (Objects) is an option labeled Undo Levels, which sets the number of times you can undo operations (up to 15). This feature really comes in handy when modeling with Metaform. How many times have you saved your primitive unmetaformed object or copied it to another layer prior to metaforming because you knew you would have to come back to it? Now, after metaforming once or twice, you can see where your object needs more work, undo all your operations, and then change it and try again. Don't confuse Redo with the way ToasterPaint's Redo function works. Modeler's Redo will redo (in order) functions that were undone. For instance, let's say that you performed three metaform functions, then hit Undo three times to return to your original object. Hitting

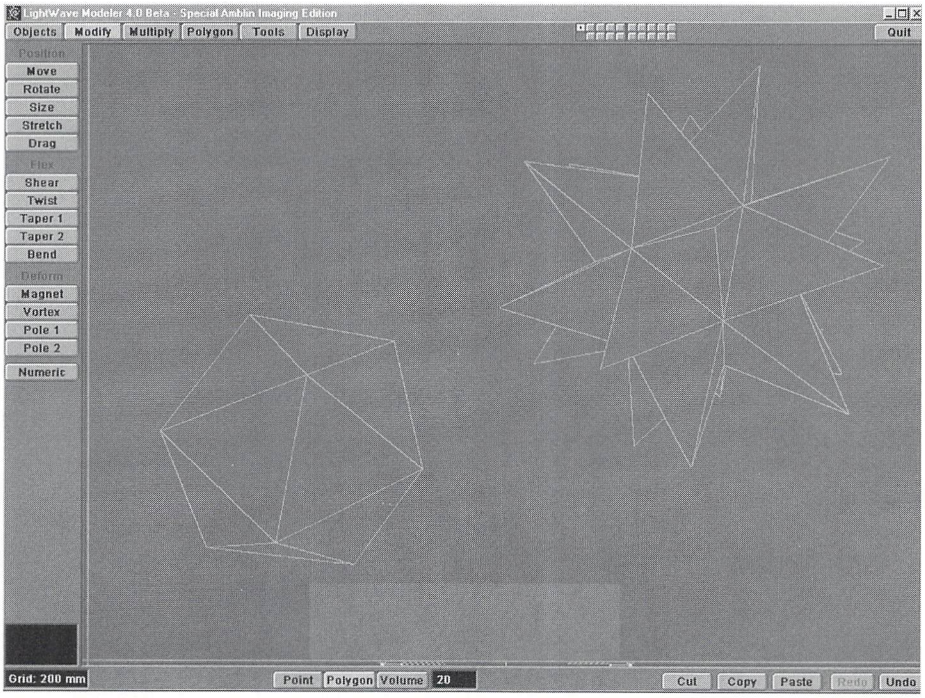


Figure 1

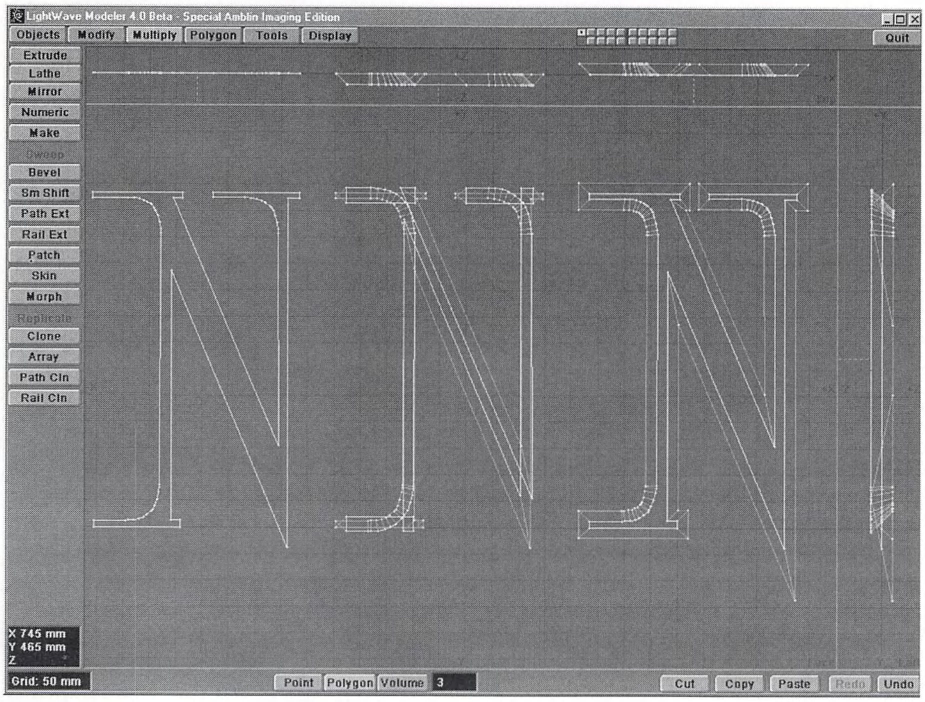


Figure 2

Redo twice would return your object to the second level metaform object. You cannot Undo something, change parameters, and then Redo.

Requestered

The first time you open a numeric requester, you may notice something a little different: there are no Units fields anymore. Now, you can type your selected units right in the numeric fields. As a matter of fact, you can mix and match, and Modeler will convert on-the-fly. For instance, you may be working in metric, but know that something has to be moved 10 inches. Typing in 10in (or 10") will convert on-the-fly to 254 cm when you press return. Even better, Modeler requesters now do basic math! Typing in 5m+10cm (you can put spaces around the + if you wish) and pressing return will give you 5.1 m. Better yet, you can mix and match units! 5m+21ft will return 11.4008 m.

Modeler 4.0 supports a large number of units of measurement, as shown below:

Supported Units

Unit		abbreviation
nanometers	(one/billionth meter)	nm
microns	(one/millionth meter)	um
millimeters	(one/thousandth meter)	mm
centimeters	(one/hundredth meter)	cm
meters		m
kilometers	(one thousand meters)	km
megameters	(one million meters)	Mm
gigameters	(one billion meters)	Gm
mils	(one/thousandth inch)	mil
inches	(2.540 centimeters)	in (or ")
feet	(.3048 meters)	ft (or ')
kilofeet	(one thousand feet)	kft
miles	(5,280 feet)	mi
nautical miles	(1.151 miles/1,852 meters)	nmi

Function Improvements

Though Modeler may not be chockfull of new features, as LightWave is, there are many improvements to existing functions. Take Bevel, for instance. In the past, beveling certain objects, such as skinny fonts, caused intersecting bevels. You could get around that by using negative values for the bevel, but now you can just select Inner or Outer edges to push the bevel in or out from the object (Figure 2). Additionally, you can select a separate surface name for the generated bevels.

Metaform has gained a Max Smoothing Angle to allow you to hold corners in a Metaform operation. A Max Smoothing Angle less than 90 degrees, for example, will not round the edges of a square box. By default, this value is set to 179 degrees, which will smooth anything.

Boolean operations have been improved, and there is finally a solid (nonmoving) preview. You have the option of viewing either a Frontface or Solid preview. Frontface shows you all of the faces that are facing toward you (whether behind other faces or not), and Solid shows what you think it would. On the Amiga version, you have the option of having any of the preview options (Wire, Frontface or Solid) moving. On the non-Amiga version, there is no moving preview option.

It's the Little Things

Don't forget to look at the keyboard shortcuts menu (F1 for non-Amiga systems). There you'll find some very nice additions, such as Weld (Ctrl-w), Drag (Ctrl-t) and Set Value (Ctrl-v). Plus, to top it off, you now have the ability to save different views (zoom level, layer and location) to the numeric keypad digits. Pressing Ctrl (Shift on Amiga) plus a keypad digit will save the current view settings to that number. Pressing that number anytime again will instantly change to that view setting. This is a great feature that I just haven't used much yet, because I keep forgetting it's there. I'm sure that once I do remember, it will become invaluable.

Don't forget the two unlisted shortcuts. Pressing the Delete key will perform a delete operation (z), and holding down the Alt key while selecting Save As will save all active layers as a layer project, which can be reloaded into Modeler but not Layout.

All in all, Modeler may not appear to have a ton of new features, as most of its changes have been hidden from users. However, it is still one of the best polygonal modelers out there, and with the addition of the underlying plug-in technology, it will get even better. Expect some interesting developments in Modeler tools in the near future.

LWP

John Gross is the editor of LIGHTWAVEPRO. *He can be reached at jgross@netcom.com.*

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The return of lwpro@internet.online

The Sunset Of My Life

by Alan Chan

Way back in my college days I wrote and directed a feature-length production in lieu of writing a senior paper. It was a small story, something I could manage on a very limited budget, about a young girl dying of cancer and the love that infuses her life. (Sad, I know. Sorry.) It was called *The Sunset Of My Life*, has nothing whatsoever to do with CGI or sunsets, and would be totally irrelevant here except for the fact that I thought it would be neat to see the title in print again.

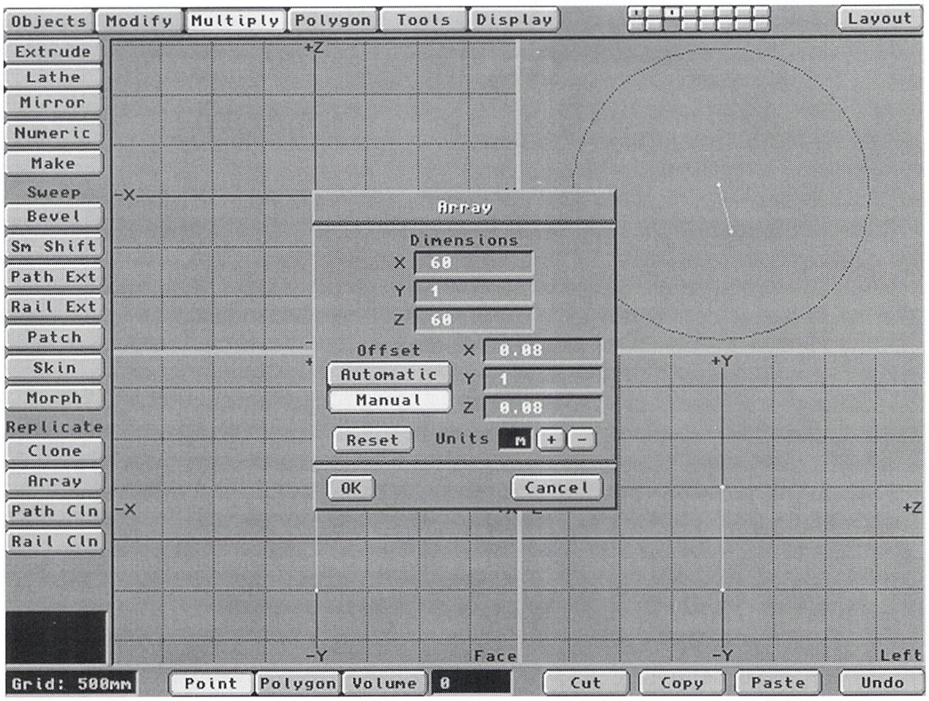
Further on in the story of my life I did several projects that necessitated the re-creation of a summer scene—a wheat field dancing in the light of the setting sun. Then, in a cyber-plot twist straight out of a Gibson novel, I met a beautiful stranger, who is now my fiancée (but that's a different story). The upshot of all this is that I am now writing this article for you, dear LightWave users, detailing how to create a CGI sunset.

Sunshiny Skies

To begin with, I broke the project into its component objects and techniques as follows:

(1) The wheat field. It has to ripple gently in the wind.
(2) The clouds. They swim lazily by.
(3) The sky color, a wonderful gradient of reds and yellows.
(4) The stars, against the backdrop of night.
And for added effect, we include:
(5) The windmill, spinning in the distance, and
(6) A bird, swooping majestically past the camera.

We'll tackle each of these elements separately, then sew them together into a seamless scene. For reference, let's construct a timeline of events we want to have happen. Frame 0: Sky is a golden red-orange color, clouds in the sky blowing by, wheat field blowing in the wind. The windmill is spinning. Frames 25-85: A bird flies across the screen. Frames 50-200: The sky begins to darken. The clouds slowly become darker, turning into deep pools of grey. Frame 100 or so: The stars start becoming visible behind the wall of clouds. Frame 120: The clouds begins to dissipate, revealing the stars in all their glory.



Array

Dimensions
X 60
Y 1
Z 60

Offset
Manual
X 0.08
Y 1
Z 0.08

Units m

Figure 1: The Array requester panel

Wheat Is Good For You

Back in the premiere issue of *LIGHTWAVEPRO*, Mark Thompson demonstrated his method of creating a field of grass. This technique has since gone down in the LightWave Hall of Famous Tricks, and today we're going to use it to build our own wheat field. For the benefit of those who don't have that debut issue, here's a brief description:

In Modeler, we use the Make Points function to plot two points: one at 0,0,0 and another at 0,1,0 (measurements in meters). This will be our blade of wheat grass. Under the Multiply panel, hit Array and enter these values in the requester (Figure 1):

X = 60
Y = 1
Z = 60
Manual Offset
X Offset = 0.08
Y Offset = 1
Z Offset = 0.08

Hit Return, and in a moment you will have cloned one blade into an orderly array of wheat (Figure 2). Of course, nobody's ever seen wheat grow in such an orderly fashion, and it's unlikely anyone ever will, so we'll need to introduce a random offset to the wheat. From the Polygon menu, select Jitter, and enter these values into the requesters:

X = 0.05
Y = 0
Z = 0.05

This will randomly shift all the points by a given offset—in this case, 0.05—thereby making the blades look random. Additionally, I selected the points representing the tops of each blade of wheat grass and applied a jitter value of 0.01 on the Y axis, just to give the wheat field a less uniform topside (Figure 3). Once done, hit F1 to center the object, apply a surface to it, say "WheatGrass," and export it to Layout. In Layout, assign the following

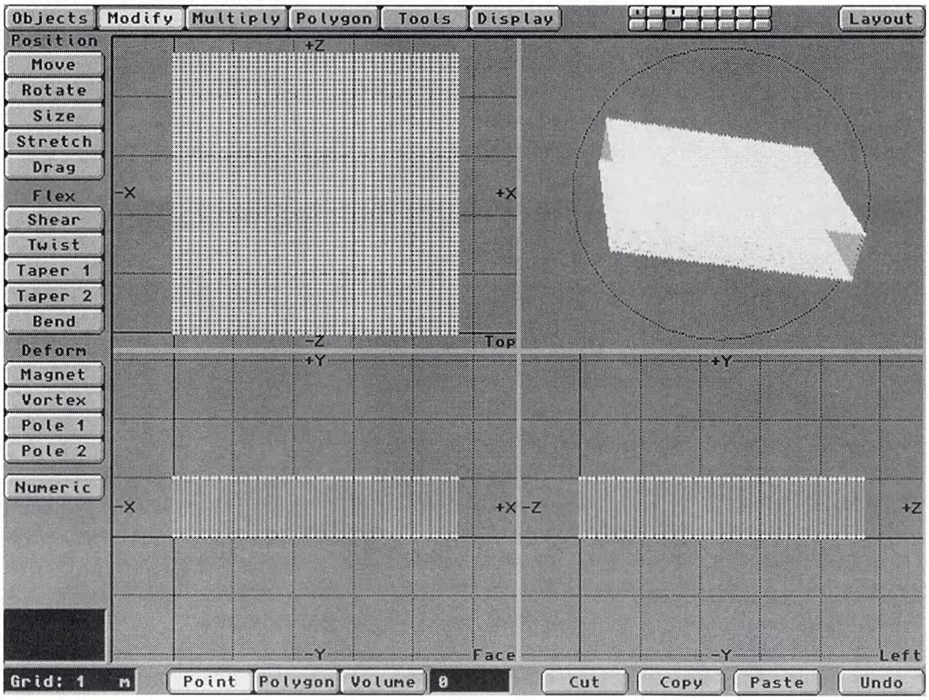

Objects
Modify
Multiply
Polygon
Tools
Display
Layout
Position
Move
Rotate
Size
Stretch
Drag
Flex
Shear
Twist
Taper 1
Taper 2
Bend
Deform
Magnet
Vortex
Pole 1
Pole 2
Numeric
+Z
-X
+X
-Z
Top
+Y
-X
+X
-Z
+Z
-Y
Face
-Y
Left
Grid: 1 m
Point
Polygon
Volume
0
Cut
Copy
Paste
Undo

Figure 2: An array of wheat blades

surface settings to the WheatGrass surface:

Surface Name: WheatGrass
Surface Color: 2,0,0
Surface Texture: Grid
Texture Center: 0, 0.6, 0
Texture Falloff: 0, 250.0, 0
Texture Color: 0, 76, 0
Line Thickness: 1.0
Luminosity: 0%
Diffuse Level: 90%

This surface setting generates a color gradient along the top of the wheat patch ranging from green on top to black. When coupled with the sunset, the surface should provide a convincing suggestion of a thick patch of wheat, where the light is unable to penetrate to the ground. Finally, to add a soft breeze effect, we select our wheat field as the current object and enter the Displacement Map panel. Type these values into the requesters:

Displacement Texture Type: Ripples
Texture Size: 5.0, 0, 5.0
Texture Falloff: 0, 100, 0
Texture Center: 2.5, 0.5, 2.5
Texture Amplitude: 0.07
Wave Sources: 2
Wavelength: 0.25
Wave Length: 0.001

The result is a soft, slow ripple across the top of the wheat field (Y = 1), one that falls off to 0% at the bottom (Y = 0). Position your camera so that you see the top part of the wheat field. It looks like the wheat stretches out to infinity, rather than constituting a small patch in front of the camera (Figure 4).

The Virtual Environment

Now seems to be a good time to discuss our environment. Looking at our list of effects, we see that we will be using LightWave's often-neglected background gradient function to create our red-orange sunset sky. However, the background gradient functions don't use envelopes, so to fade from evening to night, we'll have to fake it by dissolving up a large black ball around the camera.

Don't forget the stars. To make the stars visible against the ball of a night sky, they'll have to be placed inside the ball, and dissolved up when appropriate. Add the clouds underneath all of that, and you'll end up with something that looks like Figure 5. First, let's go ahead and set up our backgound gradient colors. In the Effects menu, turn off the Solid Backdrop option and enter these values into the appropriate requesters:

Zenith Color: 0, 0, 34
Sky Color: 174, 101, 0
Ground Color: 174, 101, 0
Nadir Color: 0, 0, 0

Also, click on Gradient Squeeze and enter these values into the requester:

Sky Gradient Squeeze: 24.0
Ground Gradient Squeeze: 80.0

Note that the Sky Color and the Ground Color are the same values. Because our wheat field creates our horizon line for us, we don't want to add another artificial horizon, so we simply make these values identical to form a seamless crossover from sky to "ground."

Clouding the Issue

A good way to replicate clouds in LightWave is by the use of fractal noise mapped onto a plane or a dome. We'll use a dome in this case, so that if we need to move the camera we won't have to worry about moving the plane as well. Go into Modeler and, using the Cone command (Objects menu), make a cone with the default at 16 sides that is 10 km in height and approximately 200 km in diameter (Figure 6). Make sure that the base of the cone sits on the Y axis, then select the polygon forming the base of the cone and delete it. Hit F to flip the polygons inward, so they are

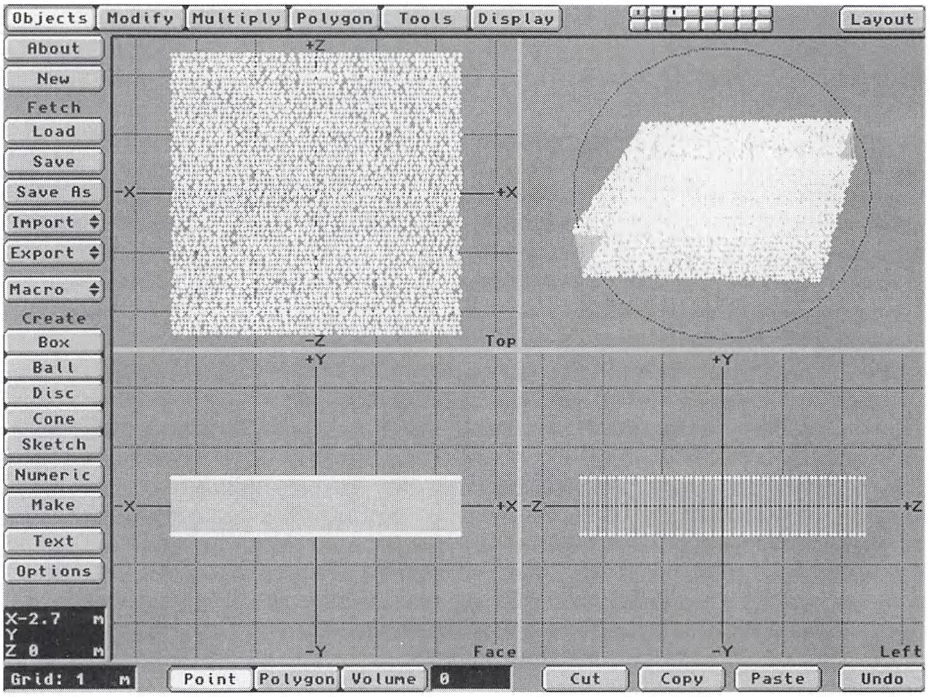
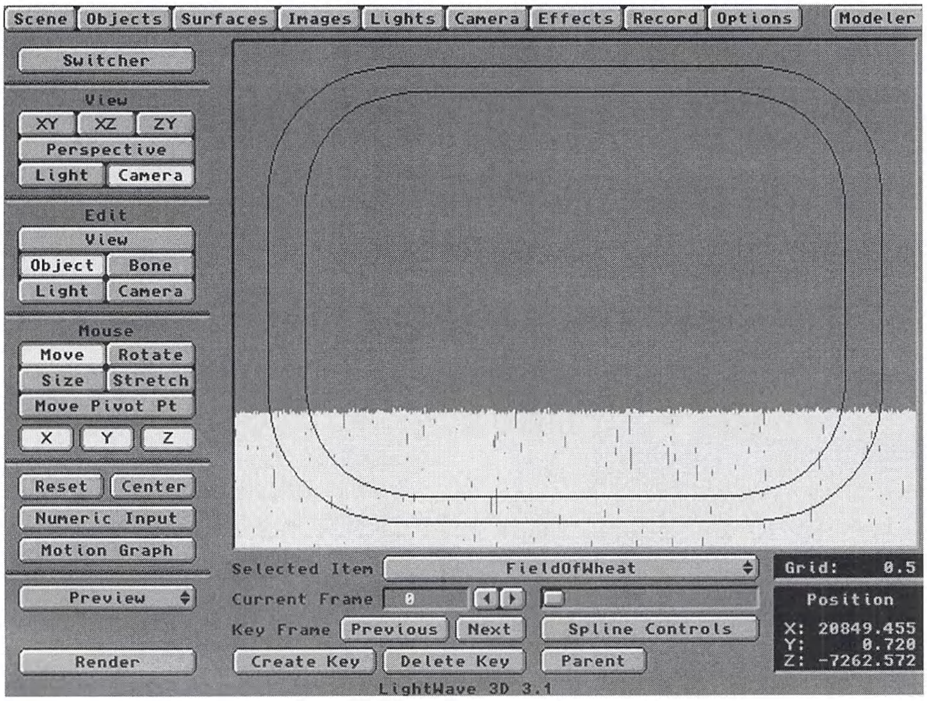

Objects
Modify
Multiply
Polygon
Tools
Display
Layout
About
New
Fetch
Load
Save
Save As
Import
Export
Macro
Create
Box
Ball
Disc
Cone
Sketch
Numeric
Make
Text
Options
+Z
-X
+X
-Z
Top
+Y
-X
+X
-Z
+Z
-Y
Face
-Y
Left
X -2.7 m
Y
Z 0 m
Grid: 1 m
Point
Polygon
Volume
0
Cut
Copy
Paste
Undo

Figure 3: A more disorganized field of wheat

The Sunset of My Life

continued from page 13



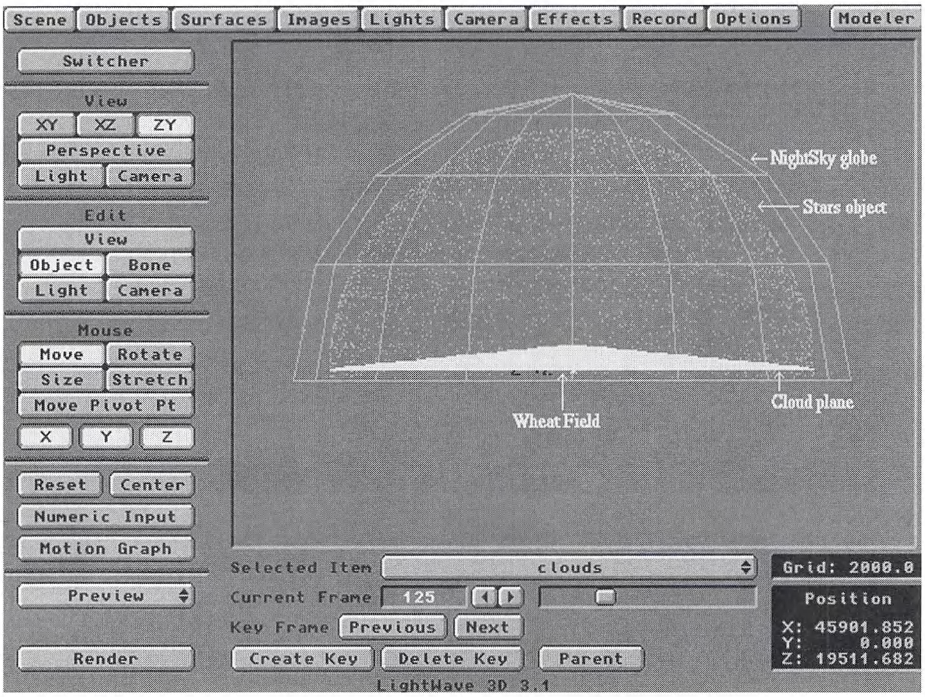
Scene
Objects
Surfaces
Images
Lights
Camera
Effects
Record
Options
Modeler
Switcher
View
XY
XZ
ZY
Perspective
Light
Camera
Edit
View
Object
Bone
Light
Camera
Mouse
Move
Rotate
Size
Stretch
Move Pivot Pt
X
Y
Z
Reset
Center
Numeric Input
Motion Graph
Preview
Render
Key Frame
Previous
Next
Spline Controls
Create Key
Delete Key
Parent
LightWave 3D 3.1

Selected Item: FieldOfWheat
Grid: 0.5
Current Frame: 0
Position
X: 20849.455
Y: 0.720
Z: -7262.572

Figure 4: The wheat field positioned in front of the camera

visible from inside the cone (Figure 7). Give this cone a surface name of "Clouds" and export to Layout. In Layout, enter these values for the Clouds surface:

Surface Name:	Clouds
Surface Color:	160, 150, 140
Luminosity:	20%
Diffuse Level:	100%
Diffuse Texture:	Fractal Noise
Texture Size:	600, 600, 600
Texture Center:	0, 3000, 0
Texture Velocity:	35, 4, -45
Texture Value:	90%
Texture Frequency:	3
Texture Contrast:	1.0
Transparency Level:	100%
Texture Type:	Fractal Noise
Texture Size:	6000, 6000, 6000
Texture Center:	0, 3000, 0
Texture Falloff:	0.0002, 0.015, 0.0002
Texture Velocity:	40, 5, -50
Texture Value:	15%
Frequencies:	6
Contrast:	2.0
Smoothing:	On



Scene
Objects
Surfaces
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Lights
Camera
Effects
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Modeler
Switcher
View
XY
XZ
ZY
Perspective
Light
Camera
Edit
View
Object
Bone
Light
Camera
Mouse
Move
Rotate
Size
Stretch
Move Pivot Pt
X
Y
Z
Reset
Center
Numeric Input
Motion Graph
Preview
Render
NightSky globe
Stars object
Wheat Field
Cloud plane
Key Frame
Previous
Next
Create Key
Delete Key
Parent
LightWave 3D 3.1

Selected Item: clouds
Grid: 2000.0
Current Frame: 125
Position
X: 45901.852
Y: 0.000
Z: 19511.682

Figure 5: Order of items in our sunset scene

Note that one fractal noise pattern is used to affect the transparency of the cloud dome, making parts of it opaque (cloudy) and others transparent (clear sky), while another is used for diffusion, to add an extra texture layer to the dome. In addition, texture velocity is added to the transparency setting to generate slow-moving clouds, and a texture falloff causes the clouds to fade away into the distance. (Actually, the texture falloff is in the Y axis. But with the texture center at 0, 3000, 0, the falloff is complete at ground level at the base of the dome, which is in the distance.) Once you're done entering the surface settings, save the object, and we'll continue building our own little perfect world.

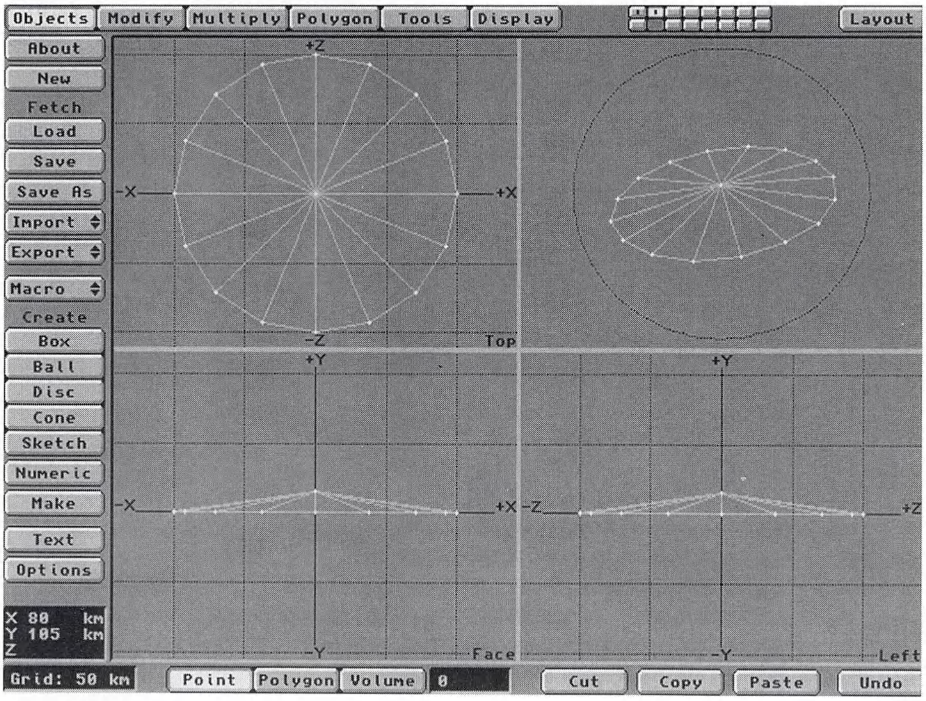
It's Full Of Stars!

Back in the days before LightWave 3.5 and Big-Medium-Small particles, I used the RandomStars object for my stars, resizing it and tweaking the surface settings as follows:

Surface Name:	Twinkly Stars
Surface Color:	241, 221, 180
Luminosity:	80%
Diffuse Level:	0%
Transparency Texture Map:	Fractal Noise
Texture Size:	4000, 4000, 4000
Texture Velocity:	50, 30, 0
Texture Value:	100%
Texture Frequency:	5
Texture Contrast:	3.0

To create stars of different apparent brightnesses, I used a fractal noise transparency texture. In addition, I attached a velocity to the texture so that the pattern would move through the stars, causing them to twinkle slowly. Of course, LightWave versions 3.5 and up allow for a variable particle size, so you may opt for that. If you've followed *LWPRO* diligently the past couple of months and dutifully read William Frawley's article on creating realistic starfields in the April 1995 issue, you may wish to try some of the techniques illustrated in that tutorial (Figure 8).

Next, we'll build our great black ball of night. Go into Modeler, select Ball (Objects menu) and build a sphere that is approximately 50km in diameter. Segments and Sides won't matter here because you won't be able to see the sphere anyway. Leave it as it is, however, and don't cut off the bottom to make a dome, because we want to ensure that everything is covered. Assign the surface name "NightSky," hit F to Flip the polygons so they face inward, and Export the object. In Layout, give this surface a color value of 0,0,9 (a slight blue tint, since we're not in space), a luminosity level of 100% and a diffuse value of 0%. Save the object, by the way.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Y 105 km
Z
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Undo

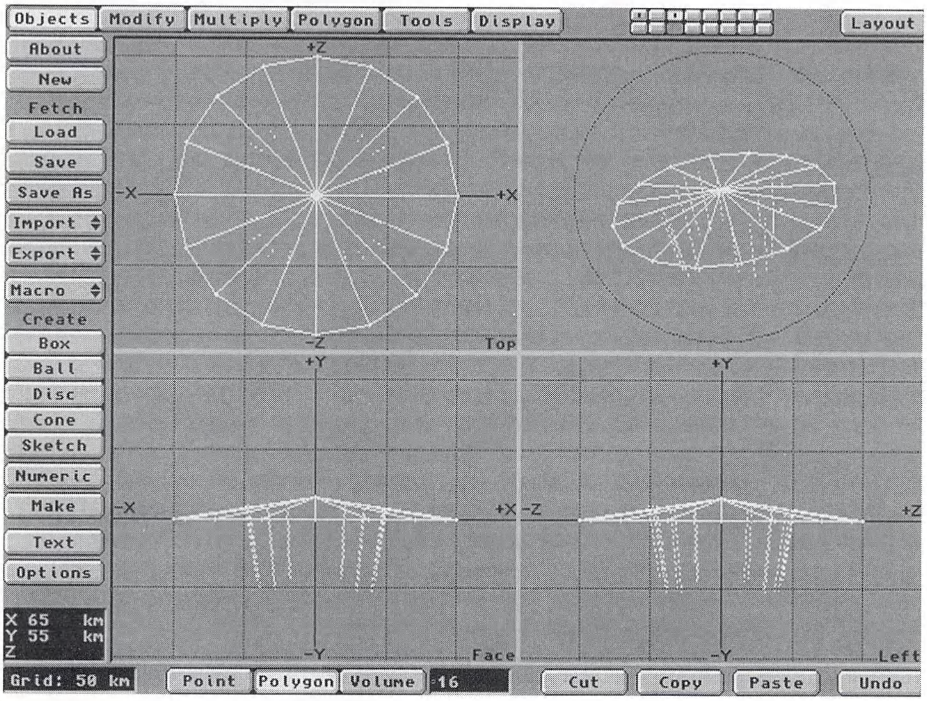
Figure 6: Our cloud cone

Piece by Piece

Other than the bird and the windmill, which are the icing on the cake, we now have all the elements we need to construct a sunset scene. Start by parenting the cloud dome, the stars and the black sphere to a null, just in case you decide to move it.

Note that if you did not keyframe your camera earlier, your camera position will jump outward to automatically frame the largest object (in this case the night sky dome). Once this happens, you will have lots of fun trying to reposition the camera by the wheatfield, so do keyframe before you load in big objects.

Also note that as as Grid Size gets bigger, Layout's screen begins to freak out. At a grid size of about 5,000 to 10,000, the left and right edges of your wheat field may disappear, though everything still renders fine. (This "undocumented feature" is still present as of LightWave PC 4.0's pre-release.) No problem. Simply bring your grid size back down and you should be fine (that is, if you keyframed earlier on).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X 65 km
Y 55 km
Z
Grid: 50 km
Point
Polygon
Volume
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Paste
Undo

Figure 7: The polygons of the cloud cone flipped inward

Now just light the wheat and set our object dissolve envelopes to get everything to appear and disappear on cue! Enter these numbers into the dissolve envelope graph for the respective objects:

Object dissolve envelope for clouds:

Keyframe	Envelope value	Spline value
0	0.0	0.0
80	0.0	1.0
126	64.0	0.05
179	100.0	1.0

Object dissolve envelope for Stars:

Keyframe	Envelope value	Spline value
0	100.0	0.0
66	100.0	1.0
106	89.0	0.05
176	0.0	1.0

Object dissolve envelope for NightSky:

Keyframe	Envelope value	Spline value
0	100.0	0.0
53	100.0	1.0
96	87.0	0.05
160	0.0	1.0

What Light Through Yonder Wheatfield Breaks

Since the only objects we had to light were the clouds and the wheat field, I kept the lighting scheme simple and only used two lights in the scene. I placed the cloud light above the wheat field and gave it a wide cone angle to illuminate the clouds directly in front of the camera. I also made it a rich red-yellow color to accentuate the sunset.

These were the settings for the light:

Light:	Radiosity Red
Light Color:	255,32,0
Light Intensity:	650%
Light Type:	Spot
Falloff:	0%
Spotlight Cone Angle:	75 degrees
Soft Spot Edge Angle:	5 degrees

Last, I placed a key light for the wheat field slightly off-center from the camera, and set an envelope to turn the intensity down along with the night sky, so that it would appear to darken along with the evening. The settings for this light were as follows:

Light:	WheatFieldLight
Light Color:	237, 157, 56
Light Intensity:	envelope

Envelope settings:

Keyframe	Envelope value	Spline value
0	200.0	0.0
50	200.0	1.0
85	157.5	0.0
110	42.5	0.0

see The Sunset Of My Life, page 17

The Depths of OCEANIC

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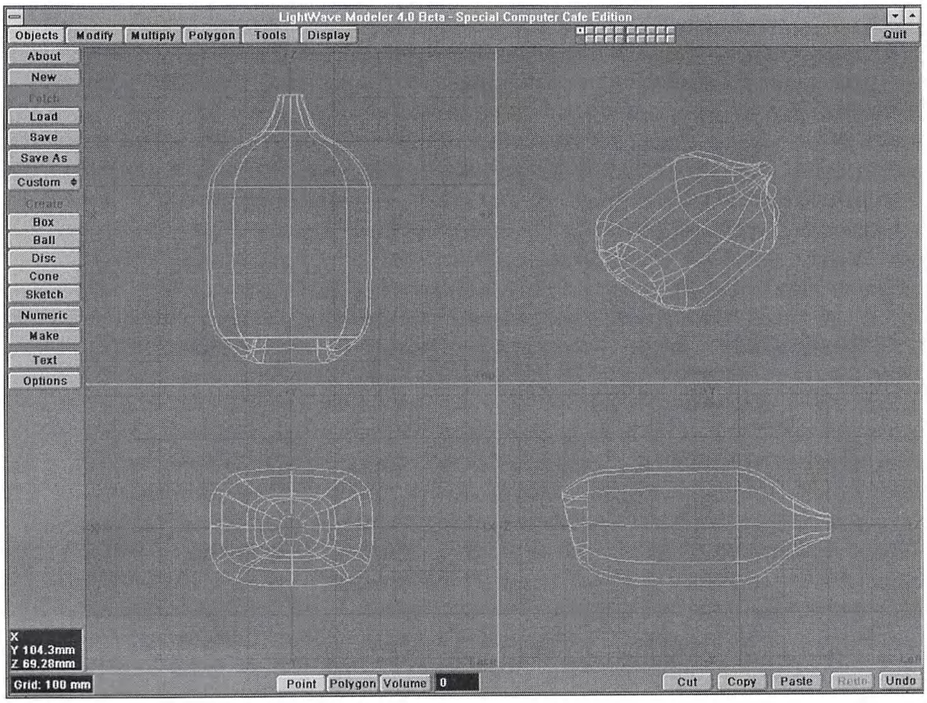
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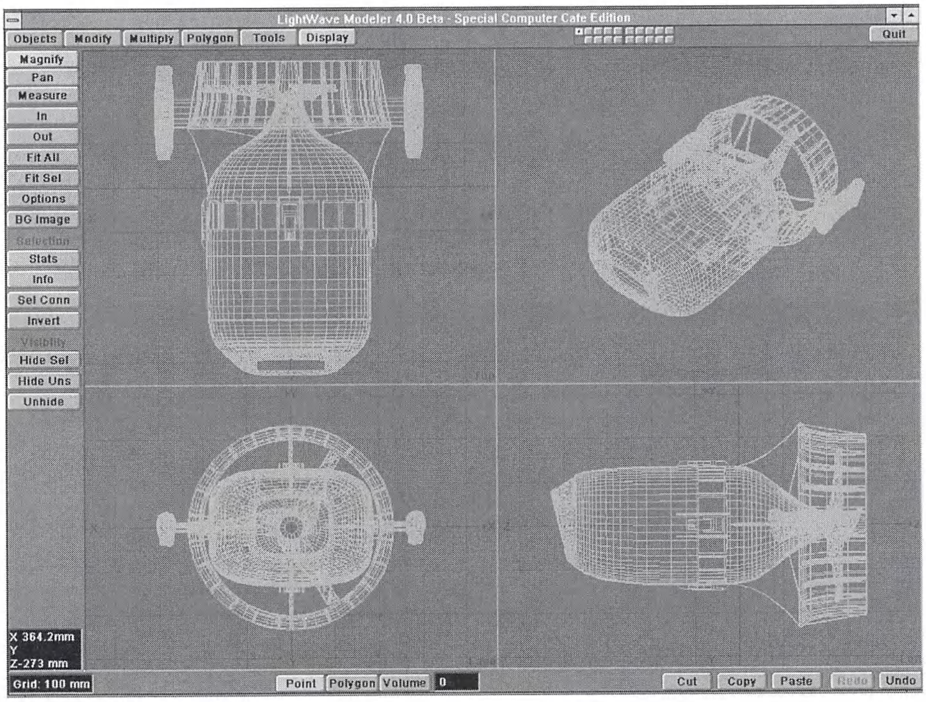
The spline cage used to generate the Mako dive vehicle.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Z-273 mm
Grid: 100 mm
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Polygon
Volume
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Cut
Copy
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The finished Mako dive vehicle.

script—so why is it never as easy as it sounds? Well, we used the PowerMacros again for this one, namely "swarm." Mark came through for us on this effect again, modifying his macro to add the features we needed. We started with the logo, added 56 starter objects (outlining the logo) and oriented the starters the way we wanted the fish oriented. Next we added our attractors and one repulsor (the objects are drawn to attractors and repelled by repulsors). When we ran the macro, it created a scene with 56 fish facing the way we wanted. They started swimming on cue and went in the right direction. An animated wipe was used to reveal the fish, which began to swim as soon as they were visible.

The Compositing

After all the changes were made (and there were many) and rendering was complete, it was time to composite the over-3,200 frames. For the majority of the comps we used LightWave, loading the background sequence into the background and the elements with their corresponding alpha channels into the foreground. We composited the bubbles by transparency-mapping them on a plane in the foreground with the rendered sequence as a backdrop picture. By doing this, we were able to make small corrections to the color of the plane and its object dissolve, making it very easy to find the right balance.

Conclusion

Well, after three months, with a few other projects sprinkled in, we finished. After generating 75 scene files, over 200 objects and 120 brushmaps, filling up 2.5GB of disk space, and consuming two bottles of Tylenol, I was more than happy to see it end. But since then I've been able to step back and enjoy the piece. Being a perfectionist, I always see the little mistakes, but overall, it's a pretty cool spot I'm proud to have been a part of.

LWP

After a successful career in traditional special effects, Tom decided on a less toxic job and went to work for Santa Maria, Calif.–based Computer Café in mid-'93. His talents can be seen in over 20 films, including Speed, Hocus Pocus *and* Freaked. *He can be reached at (805) 922-9479, or by e-mail at tomcat@terminus.com.*

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The Sunset Of My Life

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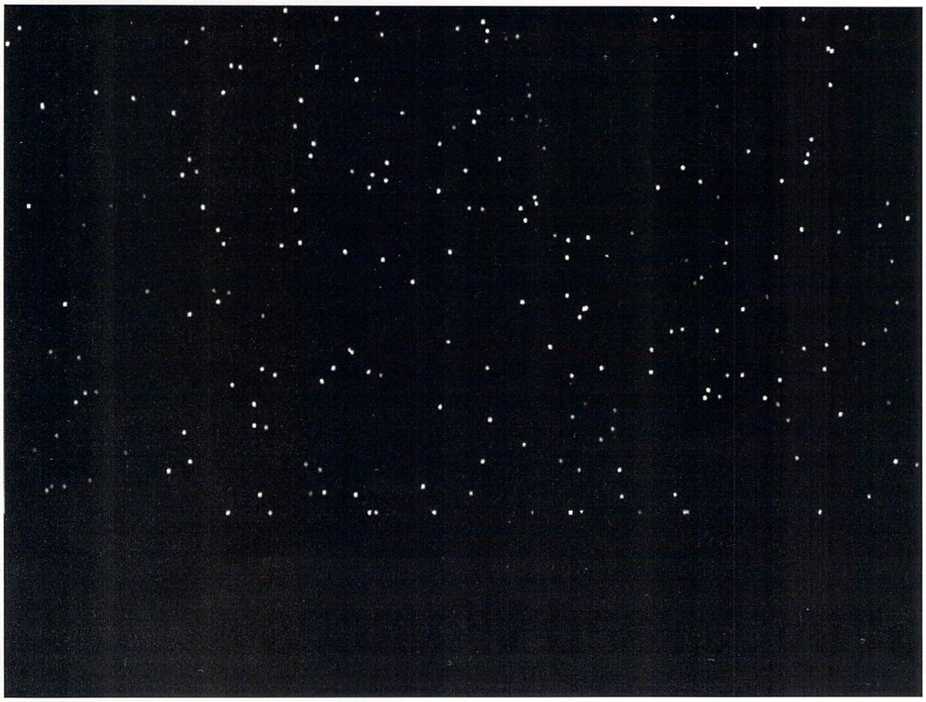

Figure 8: A realistic starfield. Wish upon a star!

Light Type:	Spot
Falloff:	18%
Spotlight Cone Angle:	30 degrees
Soft Spot Edge Angle:	5 degrees

That was it! I added the windmill and the bird flying across the screen flapping its wings to help enhance the picture, but that is, of course, a small sampler course in morphing techniques. As it stands, this scene should give you a good little summery background setting. If you like, you might jazz it up by placing a lens flare sun early in the animation. In my work I found it most effective to simply do a slow move with the camera, tilting up imperceptibly to the night sky, whereupon a shooting star goes dancing across the heavens.

LWP

Alan Chan would like to sell you a used screenplay called The Sunset Of My Life. *If you buy it, he's also got some oceanfront property in Oklahoma for sale. To place your order, promptly e-mail alan.chan@oubbs.telecom.uoknor.edu.*

LightWave Tech

continued from page 6

purchase. That is, when you plan on purchasing a system, submit a formal list of your desired configuration, including (preferably in large, boldface type) an explanation that you intend to run Windows NT. By doing this, in the event that your system fails, and the company you got it from is less than honest or willing to help, you will have documented proof of your intention to run Windows NT. You'll be in a better position to demand a refund from the seller based on the fact that he/she failed to sell you a system capable of doing the work for which it was purchased.

As for the official explanation of the problem, I am still waiting for a response from Microsoft, but let's speculate. One of the possible reasons that I've come up with, based on what I've seen, it's most likely a hardware issue. As with the last system I tested, I have had several people with problems clock their systems down to 90 MHz, and these machines have run fine.

I feel that this could be true based on the following information: When 60 to 75 MHz Pentiums were introduced, they ran at +5 volts. With speed increases came increased heat, so one way to reduce the heat was to reduce the power required to run the chip. Thus the introduction of the 90 MHz Pentiums powered with +3 volts. Due to the change in power requirements, totally new board designs were needed, so PC manufacturers went back to the drawing table and designed a board that could run the 90 MHz chips. Then, several months later, the 100 MHz chips came on the market. These chips used the same pinout and +3-volt power that the 90 MHz chips did, so systems manufacturers simply designed in the ability to change clock frequencies on the motherboard, allowing jumper changes between 90 and 100 MHz clock speeds. This is fine except for the one area that I feel is the problem: the board was made to run with a 90 MHz chip, and, as a result, performs better with a slower processor. Adding a 100 MHz processor only puts a greater strain on all of the motherboard components, which were also designed around the 90 MHz Pentium. If this is true, the recent release of the 120 MHz and greater processors will force the clone manufacturers to once again redesign their boards for these faster processors, thus fixing the problem for the slower (100 MHz) processors as well. Once again, I'm just speculating, and only time will tell if the release of new, faster Pentium motherboards brings an end to this problem.

Along with the motherboard problem, I have received several requests for tips regarding PC video cards for use with LightWave and Windows/NT. The first thing you must decide before buying a video card is the maximum color depth (256, 32000, 65000, 16.7M-True Color) and resolution you wish to run, because the color depth/resolution ratio is directly related to the amount of RAM you have on board. That is, if you intend to run with True Color (24-bit) at a resolution of 1024x768, you will need:

(1024x768) x 24 bits = 18,874,368 bits = 2,359,296 bytes = approximately 2.3MB of RAM needed on the video card

As you can see, if you reduce either the color depth or resolution, you can increase the other. Since most video cards come with a default of 2MB of RAM, you will be able to have relatively high resolution and color depth settings without the purchase of additional RAM.

As for which video cards, I have used the ATI mach 64, Matrox Impression +, Diamond Stealth and the #9 Imagine 128, to name a few. All of them performed with great results. A 128-bit card will always perform better than a 64-bit card on the same task due, obviously, to the increased processing bandwidth. The one thing that you do need to look out for is what type of system you have. If you are running standard x86/Pentium-type systems, all of these cards will function fine, but if you plan on getting an Alpha system, be cautious—not all systems have drivers for all of the cards. Ask your vendor which cards they have drivers for, or better yet, stick with cards on the NT compatibility list, since there will be drivers for these on the NT CD-ROM.

LWP

Phillip Hice is the head of Amblin Imaging's technical department.

Editor's Message

continued from page 3

some more *LWPRO* benchmarks. If you are a vendor and would like your system(s) included in these forthcoming benchmarks, please contact us. Along the same lines, *LWPRO* will be reporting on new products for LightWave use, and we welcome input from vendors.

Remember My PC?

OK, some of you may be wondering about the "PC situation" I began describing last month. As you may recall, I was going to try to get my vendor to send me paperwork stating that they had replaced my motherboard (even though they didn't). Well, my little plan worked and I did get paperwork stating that they replaced it, so I called them back and laid into them about not replacing the motherboard. I was put on hold for about 4-5 minutes. When the person I was talking to came back, he told me that he had just talked to their "NT expert," and evidently there was a problem with 100 MHz Pentiums and NT working together! They supposedly weren't totally compatible, and there was even a magazine article about it! (Of course, he couldn't remember which article it was.) When I asked him why others I know using P100s and NT had no problems, he couldn't explain why. He went on to say that his business doesn't support NT! About the motherboard, he said that they don't know what happened. They were sure that they had replaced it.

Now I was getting mad. The salesmen knew that we were going to be running NT, and if they don't support it, why wasn't I told that? When asked where we go from here, I was told that if I clocked the motherboard down to 90 MHz, it would most likely work fine. Sorry. I wasn't willing to do this, as that is not the system I purchased. Finally, they agreed to replace my motherboard (again!). So, back for service I went (at that point, I knew the way blindfolded).

A few days later, I picked my system up. (I took Tony Stutterheim with me for moral support. Plus, he's bigger than I am, in case we had to fight our way out.) I brought a screwdriver with and took off the case to confirm that it was replaced. It was. When I asked for some paperwork stating that it was replaced, I was told that there was none! When I insisted, they reluctantly wrote some up.

How's it working now? you may ask. Fine. But only if I disable the cache. (See this month's "LightWave Tech.") The problem then is that LightWave rendering takes a big time hit. If I enable my cache I get random NT crashes. OK, this wasn't acceptable, so I sent a letter (certified) off to my vendor outlining all my problems and stated that I wanted my money back, or at least they could take my motherboard back and give me enough money to purchase another board that would work. Also, I said that if I didn't hear back within three days, I would turn the matter over to my attorney. About a week later I got a message from them, and I just called them back. Of course, I had to leave a message, so I don't know what they're going to do. I guess the saga continues until next time....

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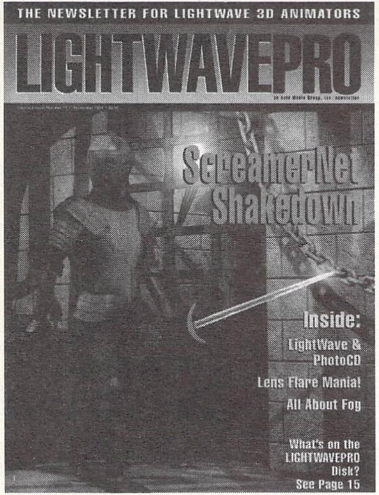
Tip of the Month:

Anytime you have a requester open in LightWave or Modeler that is a Yes/No or Continue/Cancel type requester, pressing the Return/Enter key is the same as saying Yes/Continue, and hitting Escape is the same as saying No/Cancel. Though this has always been true in Modeler, LightWave versions prior to 4.0 required that you use the mouse to select Yes or No.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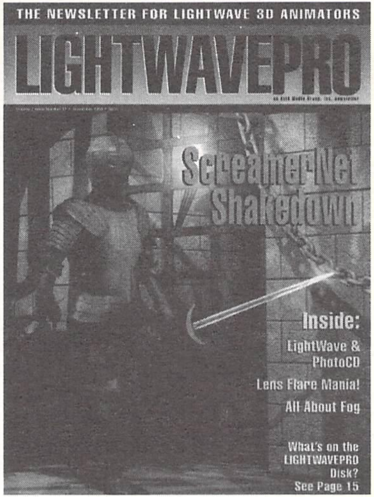

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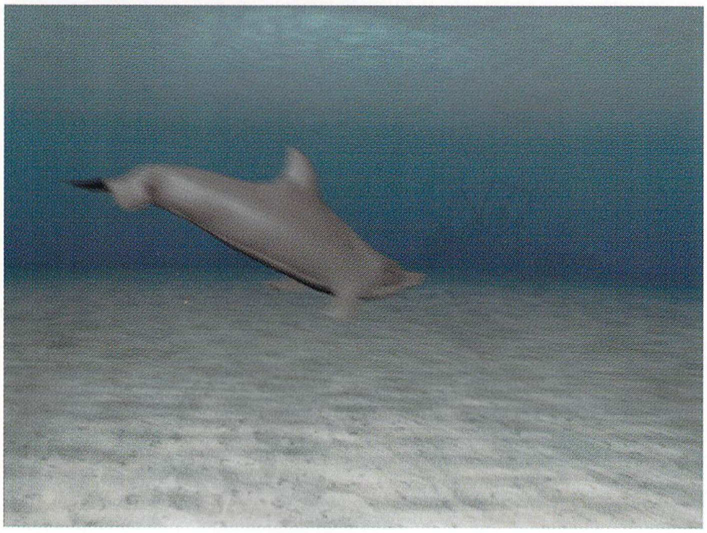

Dolphin

One of the hardest parts of the animation was creating a realistic morph from the dolphin to the SCUBA diver. See page 8 for more info.

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Aqua Logo

The client logo appears to come from the "dolpher's" air bubbles.

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Sight for Sore Eyes

The breeze of a summer wind ripples through the wheat field amid a CGI sunset

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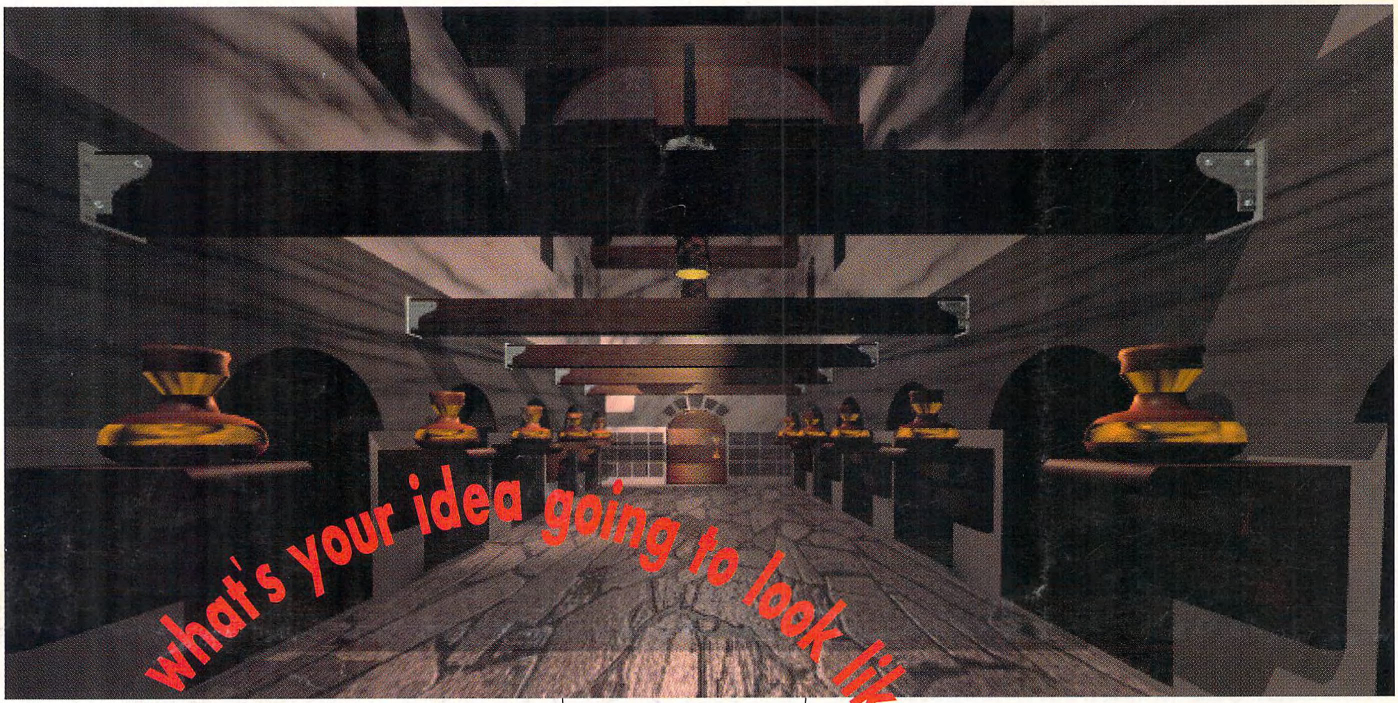

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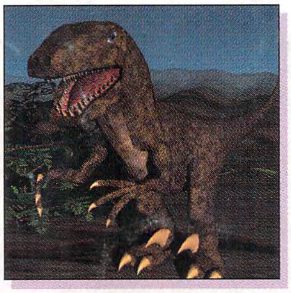

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